

# The Use Ion Exchange Resins Throughout the Lifecycle of a Mine: From Uranium Recovery to Restoration

By

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## ABSTRACT

Since the introduction of in-situ uranium recovery techniques, ion exchange (IX) resins have become an integral part of the flowsheet in many mines around the globe. Compared with other extraction technologies employed in the separation of uranium from the pregnant leach liquor, IX has demonstrated the following merits in a large number of industrial scale installations:

- Smaller footprint and lower operating costs in the exploitation of lower grade ores
- Reduction or elimination of operations associated with solid/liquid separation due to higher tolerance against suspended solids (resin-in pulp, NIMCIX columns)
- Applicable in both carbonate and acid leaching

Recent developments have evaluated selective IX resins as being technically and economically suitable for the uranium adsorption from saline solutions with high chloride tenors and for the extraction from phosphate rocks. IX adsorption also plays an important role in the restoration of closed sites and contributes to the sustainable management of the uranium mining legacy.

This paper gives a comprehensive overview of the chemical and physical requirements that need to be accommodated by IX resins in the various applications.

*Key words: Ion Exchange , In-situ Uranium Recovery, Restoration, Acid and Carbonate Leaching*